Oncolytic Virus-Based Anti-Cancer Therapy in combination with DCT (dendritic cell therapy)

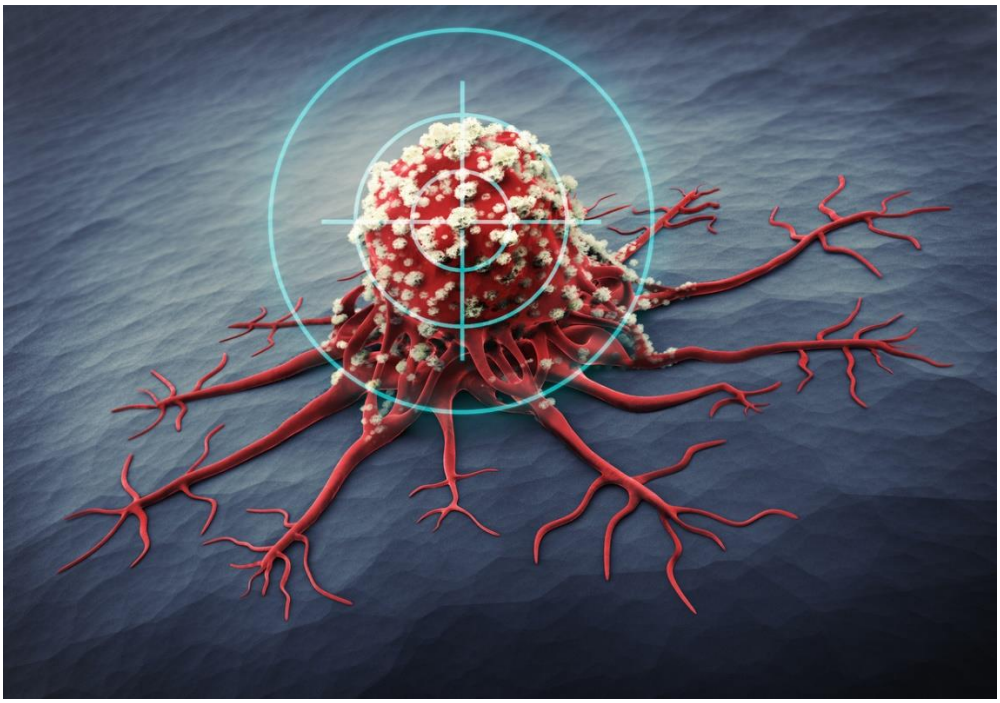
"In the treatment of tumour diseases, it is becoming increasingly clear that there is neither 'the tumour' nor 'the patient'. Standardised approaches that do not take the individual situation into account are shown to be of limited use."

Beating cancer with a virus:

Cancer virotherapy is an official, innovative, and effective cancer treatment using a special virus that can find and destroy cancer cells in the human body.

Cancer Virotherapy destroys cancer cells…

Virotherapy destroys cancer cells selectively without affecting the healthy cells of the body, this therapy has no side effects. Cancer Virotherapy stimulates the body's natural defense mechanisms by activating the immune system, which is often suppressed by other treatment methods, it is a safe therapy, with promising results in various types of cancer.



Tumour cells often lack an innate immune defence against viruses. Photo: ©istock.com/peterschreiber.media

Viruses are known to trigger many different diseases. It is less well known that certain viruses are used to treat cancer. More than 100 years ago, doctors observed for the first time that

patients were cured of their cancer after infectious diseases. Systematic studies have shown that there are types of viruses that selectively attack cancer cells. They are called oncolytic viruses. In October 2015, an oncolytic virus was approved for the first time in the USA, and in 2016 also in Europe and Australia, for the treatment of malignant melanoma.

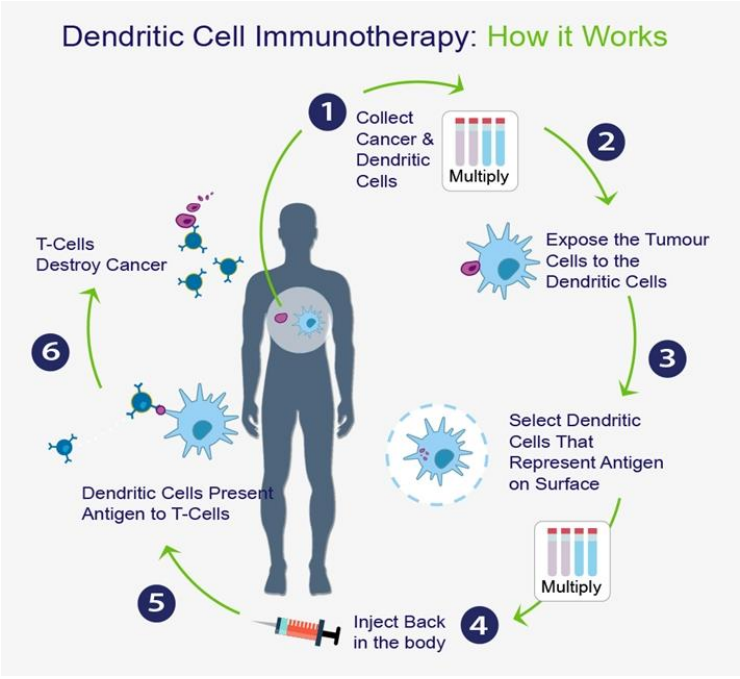
Tumour cells cannot defend themselves against viruses.

Tumour cells are particularly sensitive to viruses because, unlike healthy cells, they cannot produce enough interferon to fight off the infection. Therefore, viruses can multiply unhindered in cancer cells. This alerts the immune system and triggers a defense reaction against tumour cells that takes effect throughout the body. Healthy body cells can stop the multiplication by producing interferon and are therefore not damaged, so that the virus treatment is almost free of side effects.

The Newcastle Disease Virus (NDV)

Certain oncolytic viruses can only multiply in tumour cells and thus destroy them, while healthy cells can defend themselves against the virus. The Newcastle Disease Virus (NDV) belongs to this group. It is completely harmless to humans: it reproduces exclusively in human tumour cells without damaging healthy cells. Through infection, the tumour cells send danger signals that alert and activate the immune system. In this way, NDV potentiates the effect of Immune-vaccines

Dendritic Cells in Oncolytic Virus-Based Anti-Cancer Therapy



Dendritic cells (DCs) are specialized antigen-presenting cells that have a notable role in the initiation and regulation of innate and adaptive immune responses. In the context of cancer, appropriately activated DCs can induce anti-tumor immunity by activating innate immune cells and tumor-specific lymphocytes that target cancer cells. However, the tumor microenvironment (TME) imposes different mechanisms that facilitate the impairment of DC functions, such as inefficient antigen presentation or polarization into immunosuppressive DCs. These tumor-associated DCs thus fail to initiate tumor-specific immunity, and indirectly support tumor progression. Hence, there is increasing interest in identifying interventions that can overturn DC impairment within the TME. Many reports thus far have studied oncolytic viruses (OVs), viruses that preferentially target and kill cancer cells, for their capacity to enhance DC-mediated anti-tumor effects.

Unmask cancer cells and fight them effectively with the patient's own vaccine:

Once a tumour has established itself, it develops biological camouflage mechanisms to evade access by the immune system. Repeated vaccinations with a cancer immune vaccine enable the patient's immune system to detect these camouflage mechanisms, recognise tumour cells in the body as dangerous and fight them effectively. Like a conventional vaccination, the immune system can form an immunological memory against the tumour antigens, so that a long-term effect is given.

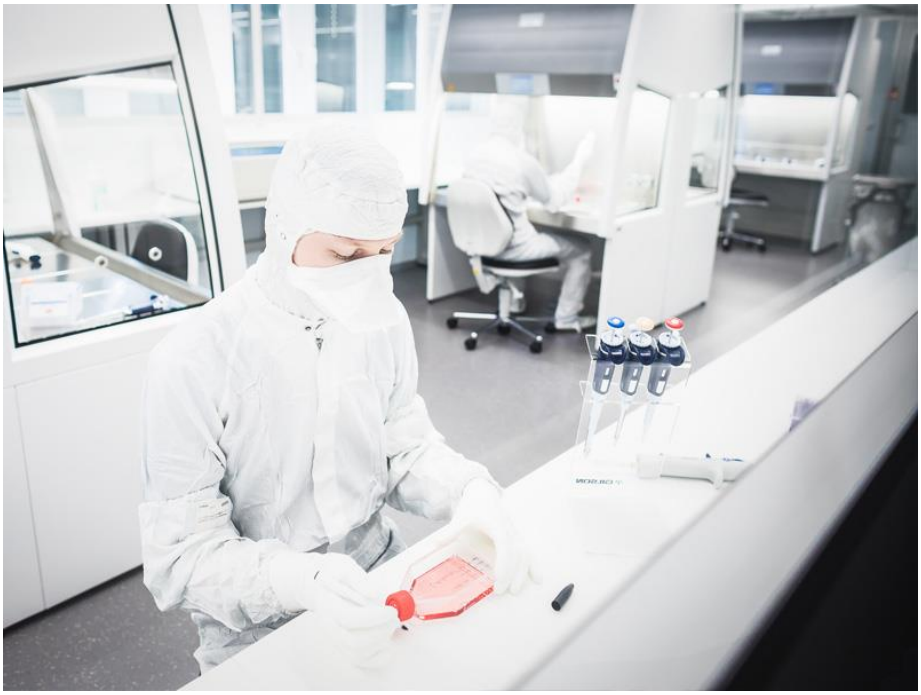
The cancer immune vaccine

The basis and decisive component of the new, innovative immunotherapy is the patient's own vaccine developed in the laboratory. To put it simply, the scientists **combine an oncolytic virus and the patient's own tumour antigens with the patient's own dendritic cells in a special clean room laboratory** to create the personalized cancer immune vaccine. This subsequently activates the immune system to fight the tumour.

Throughout Europe, our partner clinic in Germany is the only facility authorised to produce such vaccine.

Production of the vaccine

The first step is to take a blood sample. From the monocytes, a group of white blood cells, the laboratory grows dendritic cells. These are brought to maturity in the laboratory and "loaded" with information about tumour components and viral danger signals. After vaccination, the dendritic cells present these tumour-specific molecules to the patient's immune system and thus activate the T-cells. Their task is to destroy diseased cells. Based on the information, the T-cells can now recognise and attack the tumour cells throughout the body.



Universal application possibilities – effective in nearly all types of cancer

Virotherapy can be used at different stages of cancer and during all cancer treatment processes, it can also be used during palliative cancer treatment.

In summary this is a cancer treatment that is:

- Safe and well-tolerated
- Innovative and scientifically proven
- Natural, non-toxic, not genetically modified
- Double efficacy - antitumor effect and immunomodulating activity
- 4-6 times better prevent the possibility of metastasizing*
- More than 15 years of clinical experience
- Easy to administer - Subcutaneous injections.
- Personalised to your needs.

Can be combined with:

- Chemotherapy, Radiation, Immune checkpoint inhibitors
- Before or after surgery - to improve effectiveness of surgery
- With other integrative cancer treatment methods
- Can increase effectiveness from current therapy up to 60%

The treatment procedure

An immunological concept - individually optimised for each patient.

Duration: Approx. 5 weeks

The following schedule can serve as a basic orientation: it contains two vaccination cycles and lasts about five weeks.

The initial interview

The first appointment at our partner- clinic in Germany is to take a history of the disease, review all findings and discuss both conventional and possible immunological treatment options. This is followed by blood sampling to examine the immune system and tumour activity, the results of which are available after about two weeks.

In the planning meeting, the course of treatment and the procedure are discussed with the patient.

Development of the therapy strategy

The team of experts meets for an internal tumour conference and discusses the results, taking into account the history of the disease, and develops an individual therapy strategy.

First therapy session

Duration: 8 days

At the beginning of the therapy, blood is taken to produce the patient's own tumour vaccine. This takes eight days. During this time, the tumour region and the immune system are treated on an outpatient basis: with modulated electrohyperthermia and the administration of Newcastle Disease Virus (NDV), if necessary, in combination with vitamins and supplements. On the eighth day after blood collection, the first vaccination is administered.

Second therapy session

Duration: 8 days

Three weeks later, blood is drawn again for the preparation of the second immune vaccination. Further therapy sessions with virotherapy and hyperthermia follow.

On the eighth day of the second cycle, the second vaccination takes place.

Investigation of the immune system and vaccination success

Three weeks later, a blood analysis provides information about the status quo of the immune system and the vaccination success.

With an ELISpot test, the T cells are tested for an antitumour reaction against certain antigens. https://en.wikipedia.org/wiki/ELISpot

If the immune function and the T-cell reaction are good, further controls are carried out at intervals of about three months. If, on the other hand, the immune function is disturbed or the vaccination reaction wears off, further therapy sessions with virotherapy and hyperthermia or an additional vaccination can be carried out if necessary.

Supportive therapies during your stay in our partner- clinic

Hyperthermia

Modulated electro hyperthermia produces heating and irritation of tumour cells through electromagnetic waves without affecting the surrounding healthy tissue. The tumour cells thus show certain danger signals on their surface, which also provoke and strengthen the immune reaction.

Moderate whole-body hyperthermia produces a fever-like increase in core body temperature through infrared radiation. This passive temperature increase stimulates the immune cells that are responsible for tumour defence.

Therapy with checkpoint inhibitors

Checkpoints are control mechanisms of the immune system against excessive activation. Tumours "abuse" these immune control points or checkpoints to override the immune defence directed against them. This is where checkpoint inhibitors come in: they inhibit these blocked signaling pathways, in a sense releasing the brakes on the immune cells and thus giving the body's defence system the opportunity to fight the tumour again. However, the PD-1 checkpoint inhibitors are only effective if there is already a defence reaction against the tumour.

Modulation of the tumour microenvironment

The tumour microenvironment is the framework of various connective tissue cells in which the tumour cells are embedded. It is in direct interaction with the tumour cells and has an influence on their growth and the effectiveness of an immunotherapy. Therefore, our immunotherapy takes into account and influences the tumour microenvironment.

Micronutrient and vitamin optimisation

To function properly, the immune system needs to be adequately supplied with micronutrients and vitamins. We administer these specifically as needed to optimise the immunological response.

Frequently Asked Questions.

What are the advantages of immune vaccine therapy compared to classical oncological procedures?

It is well known that surgery, chemotherapy, and radiotherapy usually also damage healthy body cells. This can sometimes lead to serious side effects. Immune vaccine immunotherapy, on the other hand, has a specific effect, which means that only malignant cells are killed. This makes it almost free of side effects.

Chemotherapy and radiotherapy damage cells that divide quickly but are ineffective against "resting" tumour stem cells. A direct therapeutic effect can therefore only be assumed for the duration of the application: just as, for example, hair grows back after the end of chemotherapy, tumour cells can also grow back. In contrast, immune vaccine immunotherapy can lead to the formation of an "immune memory" that imparts longer-lasting protection, as is known from vaccinations, for example. It is also potentially effective against cancer stem cells.

Does immunotherapy work for all types of cancer? Are there cancers that respond particularly well to immunotherapy?

In principle, immunotherapy is well effective for the treatment of all malignant tumours: the immune system can reach tumour cells in all tissues and organs. However, the effectiveness has not been equally well studied for all types of cancer. Immunotherapy has so far been scientifically evaluated preferentially for cancers for which no well-effective conventional treatment is available. These include, for example, malignant melanoma and glioblastoma.

There are already immuno-oncology therapies. What is different about immune vaccine therapy

Various antibodies are approved in Europe, especially so-called checkpoint inhibitors. These bind to certain receptors and support an already existing immune reaction against the patient's own tumour cells, which, however, only exists in some of the patients. Accordingly, this form of therapy is effective in up to 20% of patients. In the case of lung carcinoma, for example, this is a better success rate than that of the usual chemotherapeutic agents. Therefore, checkpoint inhibitors are considered the drugs of first choice for this indication if the corresponding receptors are present.
However, in 80% of patients, checkpoint inhibitors unfortunately do not work because of the lack of immune response against the tumour cells. Immune vaccine immunotherapy targets the development of such an immune response and can thereby improve the efficacy of checkpoint inhibitors. This therapy principle is being discussed worldwide and tested in clinical trials.

When is the best time for a immune vaccine therapy?

Immune vaccine therapy can be performed at any point during tumour disease. Recent findings show that immunotherapy in the early stage of the disease shows the best long-term results.

Optimally, the first contact with the clinic providing immune vaccine should be made before a planned operation, as it is advantageous for DC vaccination if the patient's own tumour material can be used for antigen production.

There is evidence that the immunotherapy works better the smaller the tumour mass is, i.e., in early stages or after surgery. However, more and more successes are also being documented in patients with advanced disease.

Immune vaccine therapy can basically be combined with any conventional therapy. However, immunosuppressive therapies (e.g., cortisone, radiotherapy, or chemotherapy) can temporarily limit the function of the immune system, so that a good coordination of the different therapies is important.

If the tumour cells resist an immunological attack, adjuvant PD-1 antibody therapy, which was approved in summer 2015, can be helpful.

Does the therapy have side effects and if so which ones?

In our experience and according to scientific studies, immunotherapy is well tolerated and can maintain or improve quality of life (often in contrast to conventional therapies). Serious side effects have not been observed in our clinic in all the years of use and they are not described in the scientific literature.

A regularly occurring side effect is the development of flu-like symptoms on the day after the first administration of the Newcastle Disease Virus. However, this is harmless and easily treatable.

How many patients have been treated so far and what are the results?

In recent years, more than 2,000 patients with many different types of tumours have been treated in our partner clinic. In the process, the treatment was optimally adapted to the individual conditions of the patient.

The high degree of personalisation makes it difficult to compare courses and patient data. Statistical data on the efficacy of immune vaccine therapy can therefore not be derived, as no comparative clinical trials are conducted at our center. However, there is intensive research activity on immunotherapy worldwide, as the results to date are very encouraging.

For example, in 2018, an international study demonstrated a doubling of overall patient survival compared to standard therapies in an overly aggressive brain tumour, glioblastoma, following DC vaccination. Immune vaccine therapy also results in a prolongation of survival time of this magnitude in glioblastoma.

The more differentiated the research methods become, the clearer it becomes that tumours are quite different in their biological behavior and their response to certain therapies. Depending on the genetic profile, there are considerable individual differences even within the same type of cancer: breast cancer is therefore not simply breast cancer. Traditional efficacy trials are based on comparing large groups of patients, each receiving different treatments. Accordingly, their feasibility is becoming increasingly difficult and the value of the statistical results increasingly questionable.

Where can I get the therapy?

Treatment takes place in our private partner-clinic in Germany under specialist diagnosis and supervision.

If I have further questions, who can I contact?

Contact Mr. Bruno Rosset directly. He will help you and discuss everything else with you. He will also help you to make an appointment at the clinic and organize travel and accommodation for you:

Contact:

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Rosset Consulting
PHARMA & HEALTHCARE

Rosset Consulting: strives to be a leader in the delivery of innovative, scientifically proven cancer therapies to improve the lives and survival of cancer patients.

Important notice

The contents of this information are for general information and should not be used under any circumstances without the advice of a specialist who is familiar with the medical method of cancer virotherapy and dendritic cell therapy and who is aware of the patient's personal medical situation and history, in order to recommend the correct form of treatment.